

## CLAIMS

1. A robot arm automatic vehicle cleaning device that automatically performs a vehicle cleaning process using a cleaning brush provided to an end of a robot arm in accordance with a shape of a vehicle.

2. A robot arm automatic vehicle washing apparatus that detects a vehicle which stops at a specified vehicle stop position and automatically performs a vehicle cleaning process using a cleaning brush provided to an end of a robot arm in accordance with actual size data of a vehicle as input data,

wherein the actual size data of the vehicle is quantified as an actual size of the vehicle by analyzing vehicle image data which is created by taking pictures of a front surface, a left lateral surface, a right lateral surface, a rear surface, and an upper surface of the vehicle with a camera.

3. A vehicle cleaning rotating brush wherein a vehicle cleaning process is performed using a roll shaped rotating brush attached to an end of a robot arm of a robot arm automatic vehicle cleaning device.

4. The vehicle cleaning rotating brush according to claim 3, wherein vehicle cleaning is performed using the roll shaped rotating brush attached to the end of the robot arm of the robot arm automatic vehicle cleaning device, and

wherein the vehicle cleaning rotating brush includes several rotating brushes, each of the several rotating brushes alternately rotating in an opposing direction.

5. The vehicle cleaning rotating brush according to claim 3, wherein a comb shaped rotating brush cleaning device is fixedly attached to an attachment metal part for attaching the roll shaped rotating brush for cleaning the surface of the vehicle provided to the end of the robot arm of the robot arm automatic vehicle cleaning device, so that the rotating brush is cleaned every time the rotating brush rotates, and

wherein the rotating brush cleaning device has width equal to width of the rotating brush and length long enough to reach the rotating shaft.

6. A tire cleaning rotating brush that is disc shaped and is provided to an expandable/contractible rotating shaft,

wherein after the rotating shaft moves to a tire

position, the rotating shaft provided with the tire cleaning brush extends so that the tire cleaning rotating brush is pressed against a tire and a wheel with adequate pressure, and

wherein the tire cleaning rotating brush rotates in both directions so as to clean the tire and the wheel.

7. The tire cleaning rotating brush according to claim 6, wherein the actual size of the vehicle is quantified by analyzing vehicle image data which is created by taking pictures of a front surface, a left lateral surface, a right lateral surface, a rear surface, and an upper surface of the vehicle,

wherein the tire position where the vehicle stops is detected in accordance with the measured actual size data of the vehicle,

wherein the rotating shaft automatically moves to the tire position of the vehicle,

wherein the rotating shaft provided with the tire cleaning brush extends so that the tire cleaning brush is pressed against the tire, and

wherein the tire cleaning rotating brush rotates in both directions so as to clean the tire and the wheel.

8. A vehicle bottom surface automatic cleaning

device, wherein cleaning solution is ejected from a plurality of spray nozzles provided to whole area of a specified vehicle stop position where a vehicle stops, and

wherein bottom surfaces and peripheries of a suspension and a brake of the vehicle are cleaned by cleaning force to dissolve dirt and by impact force when cleaning solution hits area to be cleaned.

9. A vehicle bottom surface automatic cleaning device,

wherein rinsing solution is ejected from a plurality of spray nozzles provided to whole area of a specified vehicle stop position where a vehicle stops, and

wherein bottom surfaces and peripheries of a suspension and a brake of the vehicle are cleaned by cleaning force of detergent to dissolve dirt and by impact force when cleaning solution hits area to be cleaned intensely.

10. A vehicle underbody automatic cleaning device, wherein cleaning solution is ejected from a plurality of spray nozzles,

wherein the plurality of spray nozzles are provided on both sides of the specified vehicle stop position where a vehicle stops, at the same height as tire positions, and to

positions several dozen centimeters away from tires, and wherein peripheries of a tire, a wheel, and a brake, as an underbody of the vehicle, are cleaned from outside of the vehicle by impact force when cleaning solution hits area to be cleaned and by cleaning force to dissolve dirt.

11. A vehicle underbody automatic cleaning device, wherein rinsing solution is ejected from a plurality of spray nozzles,

wherein the plurality of spray nozzles are provided on both sides of a specified vehicle stop position where a vehicle stops, at the same height as tire positions, and to positions several dozen centimeters away from tires, and

wherein peripheries of a tire, a wheel, and a brake, as an underbody of the vehicle, are cleaned from outside of the vehicle by impact force, when rinsing solution hits area to be rinsed, and by cleaning force of rinsing solution.

12. A vehicle underbody automatic cleaning device, wherein several hoses or delivery pipes are tied into a bundle,

wherein the hoses or delivery pipes are used to deliver one of cleaning solution and rinsing solution,

wherein a spray nozzle is attached to an end of each of the hoses or delivery pipes,

wherein a position at which a vehicle actually stops in a specified vehicle stop position is detected,

wherein a tire stop position is calculated based on vehicle actual size data, and

wherein one of cleaning solution and rinsing solution is ejected from the spray nozzle to a tire and a wheel as an underbody of the vehicle, and a periphery of a disc brake so as to intensively perform one of a cleaning process and a rinsing process.

13. A vehicle rinsing shower curtain device that is one of arch and tunnel shaped and is provided with a plurality of rinsing solution spray nozzles that are inwardly arranged,

wherein rinsing solution is ejected from a rinsing solution spray nozzle, so that dirt attached to a vehicle, dirt dissolved after a cleaning process, and detergent, is rinsed by impact force when cleaning solution hits the vehicle and by cleaning force of rinsing solution.

14. An air jet wiping device that is one of arch and tunnel shaped,

wherein pressurized air is ejected from a plurality of pressurized air spray nozzles provided to whole internal area so as to wipe a vehicle that passes inside of the air jet

wiping device at a low speed.

15. A robot arm automatic vehicle washing device centralized control system,

wherein a main control device of a robot arm automatic vehicle washing apparatus, as one of devices within each of robot arm automatic vehicle washing devices which are dotted in places, is connected to a maintenance center of the robot arm automatic vehicle washing apparatus via a communication line, so that a fault management, a functional testing, and an operational management of the robot arm automatic vehicle washing apparatus can be centrally performed.